

CLAIMS

What is claimed is:

- 1 1. An apparatus for cleaning elongated objects comprising:
2 a cleaning tank having a feed end and an exit end formed by a top, a
3 bottom and side walls sized to hold the elongated objects in a cleaning solution;
4 a back stop mounted inside the tank at the feed end and extending in the
5 direction between the load ramp and the tank bottom; and
6 a single conveyor mounted inside the tank sloping upwardly from a lower
7 end adjacent the back stop in the direction from the tank bottom toward the exit
8 end so as to convey the elongated objects from the feed end to the exit end.
- 1 2. The apparatus of claim 1, wherein the back stop extends essentially
2 perpendicular to the tank bottom.
- 1 3. The apparatus of claim 2, wherein the conveyor extends essentially
2 at a 45° angle to the tank bottom.
- 1 4. The apparatus of claim 1, wherein the back stop and the conveyor
2 extend along intersecting planes defining an angular section therebetween.
- 1 5. The apparatus of claim 4, wherein the angular section has an
2 included angle of about 35° to about 60°.
- 1 6. The apparatus of claim 5, wherein the included angle is about 45°.
- 1 7. The apparatus of claim 1, wherein the conveyor has two spaced
2 apart chains.
- 1 8. The apparatus of claim 7, wherein the chains include sets of
2 aligned pusher flights extending from the conveyor at an angle.

1 9. The apparatus of claim 1, further including a plate mounted
2 between the chains of the conveyor movable between a retracted position and
3 an extended position above the conveyor.

1 10. The apparatus of claim 9, wherein at least the extended position of
2 the plate is above a maximum fill level of the cleaning solution.

1 11. The apparatus of claim 10, wherein the tank further comprises an
2 overflow for preventing the cleaning solution from exceeding the maximum fill
3 level.

1 12. The apparatus of claim 1, further including a water jet mounted
2 inside the tank to provide a jet stream between the back stop and the conveyor.

1 13. The apparatus of claim 1, wherein the exit end includes a rinse
2 tank for receiving the elongated objects from the conveyor when the plate is in
3 the retracted position.

1 14. The apparatus of claim 1, further including a load ramp mounted
2 inside the tank at the feed end sloping downwardly in the direction from the feed
3 end toward the tank bottom.

1 15. The apparatus of claim 1, wherein the elongated objects form a
2 pile between the back stop and the conveyor and wherein a water jet is directed
3 at one or more of the elongated objects below a top of the pile.

1 16. The apparatus of claim 15, further including a jet manifold having a
2 plurality of openings facing the pile and producing the water jet.

1 17. An apparatus for cleaning elongated objects comprising:
2 a cleaning tank having a feed end and an exit end formed by bottom and
3 side walls sized to hold the elongated objects in a cleaning solution;
4 a load ramp mounted inside the tank at the feed end sloping downwardly
5 in the direction from the feed end toward the tank bottom;
6 a back stop mounted inside the tank at the feed end and extending in the
7 direction between the load ramp and the tank bottom; and
8 a single powered continuous loop conveyor with at least two spaced apart
9 chains adapted with push flights for supporting and conveying the elongated
10 objects from the feed end toward the exit end, the conveyor having a proximal
11 end adjacent the back stop wound around a first shaft and a distal end at the
12 exit end of the tank wound around a second shaft so as to be mounted inside
13 the tank sloping upwardly in the direction from the tank bottom toward the exit
14 end; and
15 a plate mounted between the conveyor chains and movable between a
16 retracted position in which elongated objects carried by the conveyor can be
17 delivered to the exit end and an extended position above the conveyor in which
18 elongated objects carried by the conveyor contacting the plate are stripped from
19 the conveyor and returned to the feed end between the back stop and the
20 conveyor.

1 18. The apparatus of claim 17, wherein the back stop extends
2 essentially perpendicular to the tank bottom.

1 19. The apparatus of claim 18, wherein the conveyor extends
2 essentially at a 45° angle to the tank bottom.

1 20. The apparatus of claim 17, wherein the back stop and the conveyor
2 extend along intersecting planes defining an angular section therebetween.

1 21. The apparatus of claim 20, wherein the angular section has an
2 included angle of about 35° to about 60°.

1 22. The apparatus of claim 21, wherein the included angle is about
2 45°.

1 23. The apparatus of claim 17, wherein at least the extended position
2 of the plate is above a maximum fill level of the cleaning solution.

1 24. The apparatus of claim 17, wherein the tank further comprises an
2 overflow for preventing the cleaning solution from exceeding the maximum fill
3 level.

1 25. The apparatus of claim 17, further including a water jet mounted
2 inside the tank to provide a jet stream between the back stop and the conveyor.

1 26. The apparatus of claim 17, wherein the exit end includes a rinse
2 tank for receiving the elongated objects from the conveyor when the plate is in
3 the retracted position.

1 27. The apparatus of claim 17, wherein the elongated objects form a
2 pile between the back stop and the conveyor and wherein a water jet is directed
3 at one or more of the elongated objects below a top of the pile.

1 28. The apparatus of claim 27, further including a jet manifold having a
2 plurality of openings facing the pile and producing the water jet.

1 29. A method of cleaning elongated objects comprising:
2 feeding the elongated objects to the apparatus of claim 1;
3 operating the conveyor with the plate in the extended position for a
4 predetermined time; and
5 delivering the elongated objects to a rinse tank at the exit end of the tank
6 by placing the plate in the retracted position; and
7 removing the elongated objects from the rinse tank.